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REDACTED—FOR PUBLIC INSPECTION

November 9, 2017

BY HAND DELIVERY AND ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street S.W.
Washington, DC 20554

Re: DISH Network L.L.C., Redacted Version Cover Letter, MB Docket Nos. 14-50, 09-182, 07-284, 04-256, 17-289

Dear Ms. Dortch:

DISH Network L.L.C. ("DISH") submits the enclosed public, redacted version of its *ex parte* letter and attached materials. DISH has denoted with {{**BEGIN CI** **END CI**}} where its confidential information has been redacted. The confidential version of this filing is being simultaneously filed with the Commission.

Please contact the undersigned with any questions.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "Stephanie A. Roy", written over a horizontal line.

Pantelis Michalopoulos
Stephanie A. Roy
Counsel to DISH Network L.L.C.

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Secretary
Federal Communications Commission
445 12th St. S.W.
Washington, DC 20554

Re: DISH Network L.L.C., *Ex Parte* Submission, MB Docket Nos. 14-50, 09-182, 07-284, 04-256, 17-289

Dear Ms. Dortch:

DISH Network L.L.C. (“DISH”) submits this letter and the attached declaration to provide evidence that greater concentration and control of broadcast stations in a local market does *not* improve the quality of those stations. This evidence bears directly on the Commission’s reconsideration of the “duopoly” and “eight voices” rules in the above-captioned proceedings. Among other things, DISH provides evidence that greater concentration and control of more than one station in a market does *not* improve the quality of the stations as measured by viewership, and therefore vitiates the main arguments cited by parties in favor of relaxing media ownership restrictions.¹

¹ 2014 Quadrennial Regulatory Review – Review of the Commission’s Broadcast Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996; 2010 Quadrennial Regulatory Review – Review of the Commission’s Broadcast Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996; Promoting Diversification of Ownership In the Broadcasting Services; Rules and Policies Concerning Attribution of Joint Sales Agreements in Local Television Markets; Rules and Policies to Promote New Entry and Ownership Diversity in the Broadcasting Services, *Order on* (Continued...)

If adopted, the *Draft Order on Reconsideration* released by the Commission would grant in part various petitions for reconsideration of the Commission’s August 2016 *Second Report and Order* concluding the 2010 and 2014 quadrennial media ownership review proceedings.² Under the *Draft Order on Reconsideration*, the Commission would relax the local television ownership rule by eliminating the “eight voices” test and creating a case-by-case review process for proposed Big-4 duopolies. In support of that decision, the *Draft Order on Reconsideration* states that the relaxing of the rules will “improve [the broadcasters’] ability to serve their local markets.”³

DISH is submitting confidential and public versions of a declaration by DISH’s expert economists, William Zarakas and Dr. Jeremy Verlinda, showing that duopolies do not result in higher viewership ratings compared to independently owned stations in comparable DMAs (“Zarakas/Verlinda Declaration”). Viewership metrics indicate the appetite among viewers for content of a certain station. Thus, such information can provide a proxy to determine if a station is providing content that meets the needs of its local community. The Zarakas/Verlinda Declaration demonstrates that broadcast duopolies do not increase station viewership and therefore do not appear to improve the quality of stations under common control, or the ability of broadcasters to serve their local markets.⁴ Specifically, Mr. Zarakas and Dr. Verlinda examined

Reconsideration and Notice of Proposed Rulemaking, MB Docket Nos. 14-50, 09-182, 07-294, 04-256, 17-289, FCC-CIRC1711-06 (rel. Oct. 26, 2017) (“*Draft Order on Reconsideration*”).

² 2014 Quadrennial Regulatory Review – Review of the Commission’s Broadcast Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996; 2010 Quadrennial Regulatory Review – Review of the Commission’s Broadcast Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996; Promoting Diversification of Ownership In the Broadcasting Services; Rules and Policies Concerning Attribution of Joint Sales Agreements in Local Television Markets, *Second Report and Order*, 31 FCC Rcd. 9864 (2016) (“*Second Report and Order*”).

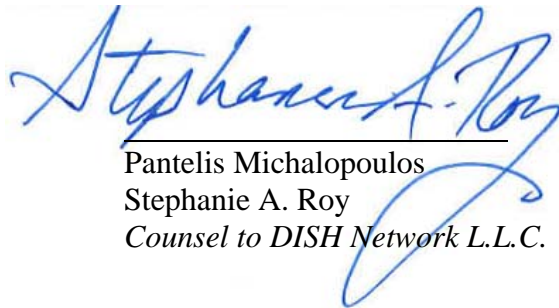
³ *Draft Order on Reconsideration* at 33 ¶ 72.

⁴ *Id.* (“we reconsider the Local Television Ownership Rule and adopt common sense modifications that will help local television broadcasters achieve economies of scale and improve their ability to serve their local markets in the face of an evolving video marketplace”); *id.* at 35 ¶ 77 (“We find that the Eight-Voices Test denies the public interest benefits produced by common ownership without any evidence of countervailing benefits to competition from preserving the requirement. Furthermore, these markets—including many small and mid-sized markets that have less advertising revenue to fund local programming—are the places where the efficiencies of common ownership can often yield the greatest benefits. Our action in repealing the Eight-Voices Test will enable local television broadcasters to realize these benefits and better

(Continued...)

the viewership of stations among DISH subscribers in 2016 based on viewership data collected by DISH in the normal course. Mr. Zarakas and Dr. Verlinda tested the proposition on which relaxation of the rules is premised using a simple method: they compared the viewership of stations under common control in the same market to the viewership of stations affiliated with the same networks but *not* under common control in comparable markets. They focused on the local news timeslot to eliminate the effect of national programming on viewership. The result? Viewership per household per month has been *less* in the duopoly markets than in the comparable non-duopoly markets over the period. This evidence undercuts the arguments cited in favor of relaxing the Commission's media ownership rules.

Respectfully submitted,



Pantelis Michalopoulos
Stephanie A. Roy
Counsel to DISH Network L.L.C.

serve their local markets. In particular, the record suggests that local news programming is typically one of the largest operational costs for broadcasters; accordingly, stations may find that common ownership enables them to provide more high-quality local programming, especially in revenue-scarce small and mid-sized markets.”); *id.* at 36-37 ¶ 81 (“This revised [Top-Four Prohibition] will continue to promote robust competition in local markets while also facilitating transactions, in appropriate circumstances, that will allow broadcast stations to achieve economies of scale and better serve their local viewers.”).

ATTACHMENT 1

**DECLARATION OF WILLIAM P. ZARAKAS AND
JEREMY A. VERLINDA**

DECLARATION OF
WILLIAM P. ZARAKAS AND JEREMY A. VERLINDA

I. QUALIFICATIONS

1. **William P. Zarakas.** My name is William P. Zarakas. I am a Principal with The Brattle Group, an economics consulting firm, where I work primarily on economic and regulatory matters concerning the communications and energy industries. I have been involved in the economic analysis of issues facing these industries for roughly 30 years. I have provided reports and/or testimony before the Federal Communications Commission (FCC), the Federal Energy Regulatory Commission (FERC), the Securities and Exchange Commission (SEC), the Copyright Royalty Judges (Library of Congress), the U.S. Congress, state regulatory agencies, arbitration panels, foreign governments and courts of law. I have previously provided testimony to the FCC on a range of issues and proceedings, including market share and churn analyses, cost models, foreclosure and bargaining models, and pole attachments matters. My CV is attached as **Attachment A**.
2. **Jeremy A. Verlinda.** My name is Jeremy A. Verlinda. I am a senior associate at The Brattle Group, specializing in competition issues in both antitrust and regulatory contexts. I have supported and prepared testimony and analysis presented to courts, regulatory agencies, and arbitration proceedings around the world. I have particular expertise in energy markets, telecommunications, transportation, payments, and advertising. Prior to joining The Brattle Group, I spent 8 years as a staff economist at the Antitrust Division of the U.S. Department of Justice. My CV is attached as **Attachment B**.

II. ASSIGNMENT

3. We have been asked by counsel for DISH to review DISH viewership data across designated market areas (“DMAs”),¹ and determine whether ownership of more than one Big 4 station (*i.e.*, ABC, CBS, Fox, and NBC) within a DMA by a single broadcaster (a so-called “duopoly” scenario²) leads to higher viewership levels. Counsel’s request was based on assertions by some broadcasters that ownership of more than one station within a DMA enables them to provide higher quality programming, which would be recognized by consumers and reflected in higher levels of viewership versus comparable stations under non-duopoly arrangements that are located in otherwise comparable DMAs. As summarized in the remainder of this declaration, our analysis contradicts such an assertion. That is, we find that viewership is not higher for stations that are owned under such duopoly arrangements when compared to otherwise comparable non-duopoly stations.

III. VIEWERSHIP ANALYSIS

4. In this analysis, we consider the claim that owning two or more stations within a given DMA enables their owner to improve the programming quality of both stations, compared to the level of programming quality that would be in place if each station remained independently and individually owned. To the extent that higher programming

¹ The term Designated Market Area, or DMA, is trademarked by Nielsen Media Research and is commonly referred when describing the geographic reach of television stations to reach viewers in a given region.

² The colloquial use here of the term “duopoly” refers to multi-station control in a DMA. Use of the term “duopoly” in this way deviates from its meaning in many economics textbooks (where a duopoly is understood to indicate that two firms control most or all of the assets or sales in a given “market”.) We adopt the colloquial FCC usage here for expositional ease. By the term “duopoly” we do not refer to stations with whom a group has arrangements such as Joint Sales Agreements, Local Marketing Agreements, Shared Services Agreements or other attributable interests.

quality translates into higher levels of viewership, one would expect to see that two stations within a single DMA that share a common owner would have viewership levels that, in aggregate, are higher compared to two stations that are independently owned.

5. We cannot actually observe both states of the world within the same DMA—that is, contemporaneous viewership levels for the same stations under different ownership arrangements. However, we are able to develop a comparative analysis using analogous DMAs. We can compare the viewership levels for broadcasters that own more than one Big 4 station within a DMA to the viewership levels for the same network affiliated stations in comparable DMAs where those stations are independently owned. This comparative approach allows us to estimate the effect that duopolies have upon aggregate viewership.
6. DISH has provided us with viewership data for Big 4 stations that summarize monthly cumulative hours viewed for each station during the 18:00 to 18:30 local time block. The 18:00 to 18:30 time period is widely regarded as a popular time slot for local news and weather broadcasting, which is a primary output and point of differentiation for local broadcast stations. Moreover, since the time block typically features local programming, viewership in this time period may be less influenced by local preferences for national programming. Viewership during this time slot is therefore a good proxy for consumer views of the quality of local programming.

7. The DMAs where broadcasters currently own multiple Big 4 stations within a single DMA are shown in Table 1.³ The table also shows the number of DMAs in which these broadcasters have duopoly ownership arrangements.

Table 1: Multi-Station Ownership by Broadcaster

Broadcasters	Number of DMAs with Duopolies
Gray	24
Sinclair	12
Media General, News-Press and Gazette, Nexstar	7
Raycom	5
Cowles	4
NBI (Northwest), Tegna, Waypoint	2
Block, Draper, GCI, Glendive, Hearst, Lk Superior, Lilly, Max, Meridith, Saga, Tribune	1

Note: Station ownership as of 2016.

8. The comparative analysis described above requires identification of “control DMAs.” By definition, control DMAs must be similar to the DMAs included in Table 1, but the relevant network affiliates should not be under common ownership with any other station in the market. We identify control DMAs using “matching” criteria. That is, we examine the similarity of DMAs to the duopoly DMAs with respect to:
- Number of TV households;
 - DISH subscriber share of TV households;

³ Because the DISH viewership information covers 2016, we examine station ownership as of 2016. Station ownership information is based on DISH contracts with broadcasters that were in place in 2016.

- Representation of networks that are the subject of the duopoly (i.e., if the duopoly was Fox and NBC, then the control DMA includes independently-owned Fox and NBC affiliates); and
 - Advertising revenue for same affiliates in 2014.⁴
9. We use these matching criteria to compare the difference between the duopoly DMA and each candidate DMA, and for each duopoly DMA select the top three candidate DMAs as controls based on degree of similarity.⁵ The results of this matching exercise are provided in Appendix A.⁶
10. The claim by some broadcasters that duopoly ownership results in higher quality programming, reflected by higher viewership, should be borne out by comparably higher levels of viewership across both stations included in their duopoly ownership. Thus, we measure the difference between 1) the sum of viewership hours per household across the duopoly stations included in the duopoly DMA and 2) the average of the sums of viewership per household across the comparable stations (of the same network affiliation) included in the control DMAs.
11. Table 2 lists the station viewership for the duopoly and control DMAs for the Sinclair duopolies. For example, consider the Sinclair duopoly ownership arrangement in Bakersfield, CA, where Sinclair owns both the CBS and Fox affiliates. Using our

⁴ Station-level advertising revenue is as documented by BIA/Kelsey Media Pro.

⁵ We use the Mahalanobis distance metric for identifying control DMAs for each duopoly DMA. See Imbens, Guido W., and Donald B. Rubin. *Causal inference in statistics, social, and biomedical sciences*. Cambridge University Press, 2015, at 342, 349.

⁶ The duopoly DMAs in the Appendix omit broadcasters with only one duopoly DMA. Due to incomplete data for the matching criteria, we are only able to identify control DMAs for 61 of the remaining 72 duopoly DMAs described in Table 1.

matching criteria, we determined that, for CBS and Fox affiliates, Erie, PA; La Crosse-Eau Clair, WI; and Eureka, CA are DMAs that are very similar to Bakersfield.

12. Table 2 also shows that the average 2016 monthly viewership per household in Bakersfield was {{BEGIN CI END CI}} for CBS and {{BEGIN CI END CI}} for Fox, for a combined viewership per household value of {{BEGIN CI END CI}} across those two stations. By comparison, the average viewership per household was {{BEGIN CI END CI}} for CBS across the three control DMAs, and, likewise, was {{BEGIN CI END CI}} for Fox, for a combined average value of {{BEGIN CI END CI}} across the two stations. Thus, in Bakersfield, on average, DISH households watch Sinclair’s CBS and Fox stations {{BEGIN CI END CI}} per month (on a combined basis) when compared to the combination of the same affiliates in otherwise comparable DMAs.
13. We observe a similar result when we consider all of the 10 DMAs where we have sufficient data to run this comparison for Sinclair duopolies. That is, viewership per household levels for the stations in DMAs where Sinclair has duopoly ownership arrangements are about {{BEGIN CI END CI}} less than non-duopoly stations located in comparable DMAs.⁷

⁷ Again, for concreteness, this figure is the combined value across the relevant affiliates within the DMA.

**Table 2: Sinclair Duopoly DMA Viewership per Household per Month
Duopoly versus Control DMAs**

{{BEGIN CI

END CI}}

Source: DISH viewership data for 2016 during 18:00-18:30 local time

Note: We omit due to insufficient matching criteria data the following Sinclair Big 4 duopoly DMAs: Charleston-Huntington WV, Chattanooga TN, Columbus OH, and South Bend-Elkhart IN.

14. We applied the same methodology to the other broadcasters who have duopoly ownership arrangements (shown in Table 1). We examined the cumulative hours of viewership per household across stations for each duopoly DMA, and compared it to the viewership for the same stations in the control DMAs. These comparisons are summarized by broadcaster in Table 3 below. Table 3 also provides the combined effect across the 61 duopoly DMAs for which we have sufficient data to construct relevant control DMAs.

**Table 3: Duopoly Broadcaster Viewership per household per month (per DMA) in
Duopoly versus Control DMAs**

{{BEGIN CI

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Source: DISH viewership data for 2016 during 18:00-18:30 local time

15. As seen in Table 3, our results indicate that there is no empirical evidence that common ownership increases viewership.

APPENDIX A: CONTROL DMAS

{{BEGIN CI

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ATTACHMENT A: WILLIAM P. ZARAKAS CV

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WILLIAM P. ZARAKAS
Principal

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Bill.Zarakas@brattle.com

William P. Zarakas is a Principal with The Brattle Group, an economics consulting firm, and an expert on economic, strategic and regulatory matters involving the energy, telecommunications and media industries. He also heads Brattle's retail energy practice, which covers Brattle's work in infrastructure, grid modernization and smart grid initiatives, the integration of distributed energy resources, and evolving utility business and regulatory models, including investment incentive structures and performance based regulation.

In addition, Mr. Zarakas led Brattle's team in analyzing the competitive and economic impacts of recent telecom and media mergers, and applied vertical foreclosure and Nash bargaining models to estimate market and price impacts. He also leads Brattle's work concerning the economics and financial feasibility of building-out broadband infrastructure. Mr. Zarakas has also performed valuations of wireless spectrum, and developed methodologies for the distribution of royalties and retransmission fees in the cable and satellite television industries.

Mr. Zarakas has provided testimony and expert reports before the Federal Communications Commission, the Federal Energy Regulatory Commission, the Securities and Exchange Commission, the Copyright Royalty Judges (Library of Congress), the U.S. Congress, state regulatory agencies, arbitration panels, foreign governments and courts of law. He has led (and authored reports concerning) special investigations on behalf of corporate boards of directors and audits of management practices and operational and financial performance on behalf of regulatory commissions. He holds an M.A. in economics from New York University and a B.A., also in economics, from the State University of New York.

Utility Business Models and Investment Analysis

- Advised New York's Reforming the Energy Vision (REV) architects (i.e., the NYPSC chair and NYSEDA leads) on implementation and utility transformation issues. Led comprehensive modeling and scenario analysis concerning the impact of distributed energy resources (DERs) on utility sales, revenues, capital and operating cost structures and financing, and on utility rate base and customer rates and bills. Project also involved developing scenarios for energy and related service based transactions occurring over a utility platform and the most appropriate scope of a platform in the near term.
- Modeled and advised New York's six investor owned utilities on matters relating to regulatory incentive structures. The New York REV created earnings adjustment mechanisms (EAMs) intended to provide a bridge from the traditional regulatory model to a (still evolving) next generation model. The State's utilities are responsible for specifying the

new EAMs. Brattle worked with the utilities to design EAMs and also conducted scenario analysis that projected likely outcomes in key REV areas (e.g., peak reduction, asset utilization and integration of DERs).

- Led strategic analysis of next generation (i.e., utility of the future) regulatory frameworks for a Midwestern electric utility. Specifically, Brattle was asked to opine on the future of utility platforms (highly transactive two-sided markets vs. less transactive / more informational) recommend the appropriate regulatory framework for the near to intermediate term. Brattle's analysis included a review of DER feasibilities and transactive platform requirements. It also included a comprehensive assessment of regulatory incentive frameworks, including performance based regulation and the U.K.'s RIIO model.
- Led system reliability and resilience investment analysis for a large combination electric and gas utility. Customer concern (and political pressure) following a series of weather-induced large scale and long duration outages led to the utility developing an extensive and relatively expensive resilience investment program. Brattle advised the company on benefits and costs, and employed a value of lost load (VOLL) methodology to estimate customer willingness to pay for higher reliability in extreme circumstances. The company modified the scope of its investment program accordingly. Brattle analysis and reports were also included in the company's regulatory filings. (Public Service Electric & Gas (PSE&G) in NJ BPU Docket No. EO13020155 and GO13020156)
- Advised board of trustees and executive management on strategic and organizational direction for the Long Island Power Authority (LIPA). LIPA assumed a municipal corporate structure following the decommissioning of a nuclear power plant. The utility had among the highest rates in the U.S. and the lowest customer approval ratings. Brattle was retained to advise the utility and the Governor's office on ways to improve cost structure (e.g., through privatization, municipalization and outsourced management services arrangements) and ways to better understand and meet customer needs (e.g., community energy programs and resilience improvements). Options were evaluated based on rate impacts and risk factors, including risks associated with organizational transformation. Project required extensive modeling of LIPA operations and financing scenarios, as well as analysis of power and transmission markets.
- Advised board of directors of a major generation and transmission (G&T) cooperative and its member electric distribution cooperatives on matters concerning: asset valuations, risk management strategy, merger and acquisition options, and outlook for retail electric markets.

Cost, Rate and Incentive Analyses

- Led analysis and authored report and testimony concerning the specifications, targets and incentive structure for performance regulatory measures for use by the Hawaiian Electric Companies. Before the Public Utilities Commission of the State of Hawaii, In The Matter of Public Utilities Commission Instituting an Investigation to Reexamine the Existing Decoupling Mechanisms Docket No. 2013-104. September 15, 2014
- Led analysis and authored report and testimony concerning incentive regulatory frameworks and targeted performance incentives for electric and natural gas utilities in Massachusetts. Massachusetts D.P.U. 12-120. March 2013.
- Led and authored report concerning comprehensive analysis of approaches to setting electric distribution reliability standards on behalf of the Australian Energy Market Commission (AEMC).
- Directed and provided expert testimony on price cap frameworks and productivity analysis applied to telecommunications business data services (BDS, previously referred to as special access) in proceedings before the U.S. Federal Communications Commission. WC Docket No. 16-143, WC Docket No. 15-247, WC Docket No. 05-25, RM-10593.
- Directed and provided testimony concerning pole Attachment rates in Virginia Cable Telecommunications Association v. Virginia Electric and Power (December 21, 2001) and FCC Docket No. 15-90, File No. EB-15-MD-006 (November 18, 2015).
- Analyzed costs and value of retransmitted television programming in cable and satellite video markets and determined distribution of copyright royalty fees among content providers. Authored expert report Before The Copyright Royalty Judges, Library of Congress, Washington D.C. In The Matter of Distribution of the 2004 and 2005 Cable Royalty Funds, Docket No. 2007-3 CRB CD 2004-20. June 1, 2009
- Directed comprehensive modeling and analysis and provided testimony in multiple U.S. state regulatory proceedings concerning analysis of rates for unbundled network elements (UNEs), undertaken in fulfillment of requirements associated with the Telecommunications Act of 1996, using the Total Element Long Run Incremental Cost (TELRIC) methodology.
- Led analysis and provided testimony concerning incentive systems to be applied to incumbent local exchange telephone carriers (ILECs) on behalf of the New York State Department of Public Service; involved modeling determining total factor productivity (TFP)

based on empirical analysis and consideration of projected performance improvement initiatives.

- Conducted cost-of-service and marginal cost analyses for an international broadband company spanning the U.S., European and Asian markets.
- Directed cost of service and feasibility analysis for a municipality planning on deploying a broadband Wi-Fi network.
- Directed analysis and authored white paper on empirical analysis concerning the impact of changing the price of wholesale access and levels of investment in the U.S. telecommunications market. Results reported in white paper entitled: “Structural Simulation of Facility Sharing: Unbundling Policies and Investment Strategy in Local Exchange Markets.”

Broadband Modeling and Business Planning

- Developed and authored report concerning the costs of deploying wireless broadband in rural areas. Before The Federal Communications Commission In The Matter Of Connect America Fund and Universal Service Reform – Mobility Fund. WC Docket No. 10-90 and WT Docket No. 10-208A. (February 2013, and updated analysis May 2016.
- Directed comprehensive financial analysis for a U.S .national broadband provider including: developing projections of demand, price elasticities, revenue and capital and operating costs, and pricing points.
- Performed comprehensive business case analysis of entry into the broadband market (including voice, internet access and video services) on behalf of a major U.S. electric utility. Scope of work included technology assessment and detailed financial modeling. Work included customer and geographic segmentation, pricing scenarios and elasticity analysis.
- Led comprehensive financial analysis concerning the deployment of a broadband communications network for an Asian electric utility. Related work included assessing transfer pricing methodologies regarding the use of utility assets, resources and easements by the broadband affiliate.
- Directed and led analysis of business diversification for multiple electric utilities. Business opportunities analyzed included dark fiber construction and third party use of utility poles, towers and conduit. Scope of analysis included financial modeling and transfer pricing.

Competition Analysis

- Directed comprehensive analysis and provided testimony concerning market shares, vertical foreclosure and Nash bargaining in the Application of Comcast Corporation, General Electric Company and NBC Universal, Inc. for Comcast to Assign or Transfer Control of Licenses, Before the Federal Communications Commission, MB Docket No. 10-56. (December 2014 and March 2015).
- Led analysis and provided testimony concerning the merger of TECO Energy, New Mexico Gas Company, and Continental Energy Systems, Before the Public Regulation Commission Utility Case No. 13-00231-UT (March 2014).
- Directed analysis and authored report regarding the effects of changes in regulatory fees and taxes on mobile prices, penetration and the macro economies of 22 countries in the Middle East and Africa. Study, conducted on behalf of a major mobile operator, involved detailed analysis of the relationships between marginal cost and prices, market structure and concentration, and empirical relationships concerning mobile penetration and GDP.
- Led analysis and authored expert reports concerning prospective merger savings and divestiture losses for electric and gas utilities. Scope of work included analyses involved in determining the operating and capital impacts of mergers under multiple scenarios, and also involved the anticipated economic inefficiencies resulting from forced divestiture. Reports authored included studies of merger efficiencies and reports concerning Economic Loss Studies included in U-1 filings before the U.S. Securities and Exchange Commission. Economic Loss Studies are required under PUHCA Section 11 (b) (1) Clauses A, B, and C when utility merger results in the establishment of a registered holding company with electric and gas businesses. Work in these areas included detailed analyses of current and hypothetical future electric and gas utility operations.

Spectrum Valuations

- Conducted analyses and authored expert report estimating value of Mobile Satellite Service (MSS) spectrum (i.e., the 2 GHz Band from 2000-2020 MHz and 2180-2200 MHz, the Big LEO from 1610-1626.5 MHz and 2483.5-2500 MHz, and the L-band from 1525-1559 MHz and 1626.5-1660.5 MHz) in several matters, including matters involving the Terrestrial bankruptcy. Analyses included impact of incorporating FCC authorized ancillary terrestrial component (ATC) into MSS mobile broadband networks.
- Analyzed spectrum values in the 2.3 and 2.5 GHz bands for the U.S. market.

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WILLIAM P. ZARAKAS

- Analyzed value of Advanced Wireless Services (AWS; 1.7 / 2.1 GHz) band for the U.S. market.
- Analyzed value of unpaired 2.1 GHz spectrum for the U.S. market.
- Analyzed value of 2.3 GHz (WCS) 3.5 GHz (FWA) spectrum in Canadian market.
- Authored report concerning market comparable analysis of U.S. PCS market.
- Provided expert testimony concerning potential value of wireless spectrum in the 700 MHz band.
- Analyzed value of Specialized Mobile Radio (SMR) and Private Land Mobile Radio Services (PLMRS) spectrum on behalf of utility operating companies in the U.S. market.
- Analyzed value of narrowband PCS and IVDS spectrum portfolio.
- Directed, led analysis and authored report concerning valuations of wireless spectrum in the Middle East-North African (MENA) region for an international wireless operator.
- Directed, led analysis and authored report concerning impact of additional wireless operators on spectrum values for the telecommunications regulator in the Kingdom of Jordan.

Arbitration, Special Investigations and Commercial Litigation

- International Arbitration (satellite communications): Authored expert report concerning the impact of an alleged breach of contract on lost profits in a 23 country business operation concerning a satellite communications business. Performed detailed financial modeling to determine revenues, net income and net present value using risk adjusted discount rates for a satellite service provider.
- Forensic Analysis and Special Investigation: Directed consulting team and authored report for the forensic analysis of the economics, financial reporting and accounting associated with allegation of accounting and financial improprieties by Global Crossing. Worked on behalf of the Special Committee on Accounting Matters composed of a subset of (and reporting to) the Board of Directors of Global Crossing Ltd. Analysis involved determination of basis for revenue recognition for concurrent (i.e., “swap”) transactions. Analysis included in report by the Special Committee entitled “The Concurrent Exchange of Fiber Optic Capacity and Services Between Global Crossing and its Carrier Customers.” January 2003.
- Commercial Litigation: Directed expert consulting team in litigation matter concerning the deployment schedule of bandwidth on a major undersea cable project. Case involved

allegations of breach of contract. Case work involved modeling of undersea fiber optic bandwidth in major undersea crossings and financial analysis of project viability.

- **Forensic Analysis and Securities Litigation:** Directed consulting team and led technical analysis concerning accounting and financial disclosure on behalf of the defendant in a class action against corporate officers, directors, controlling shareholders and the company's outside auditors alleging violations of the Securities Act of 1993 and the Securities Exchange Act of 1934. Scope of case involved accounting and disclosure treatment of complex leases.
- **Special Investigations and Audits:** Directed project teams, led technical analysis and authored reports in multiple special investigations and audits of management, operations and finance and accounting on behalf of regulatory utility commissions. Special investigations and audits involved allegations of improper cross subsidization and/or transfer pricing practices by regulated utilities (telecommunications, electric and/or natural gas) and their effect on rates charged to consumers. Special investigations and audits were conducted for regulatory commissions in Alabama, Kentucky, Maryland, New York and Pennsylvania.
- **Commercial Litigation (broadband communications):** Provided expert testimony concerning the estimate of commercial damages stemming from an alleged breach of contract associated with relocating infrastructure assets. Public Service Company of New Mexico vs. Smith Bagley, Inc. and Lite Wave Communications LLC In The United States District Court For The District of New Mexico. March 2007.
- **Commercial Litigation (wireline communications):** Developed analysis and supported expert testimony concerning damages associated with cable breaks and disruption of wholesale transport services. Analysis involved estimating lost profits and determining replacement cost of temporarily lost capacity. MCI WorldCom Network Services, Inc. v. MasTec, Inc. before the United States District Court Southern District of Florida, Case No. 01-2059-CIV-GOLD. May 2002.

TESTIMONY

Declaration (August 7, 2017) and Reply Declaration (August 29, 2017) of William P. Zarakas and Jeremy A. Verlinda Before the Federal Communications Commission In the Matter of Tribune Media Company (Transferor) and Sinclair Broadcast Group, Inc. (Transferee), Consolidated Applications for Consent to Transfer Control, MB Docket No. 17-179

Declaration of William P. Zarakas Before the Federal Communications Commission In the Matter of Business Data Services in an Internet Protocol Environment, Investigation of Certain Price Cap Local

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WILLIAM P. ZARAKAS

Exchange Carrier Business Data Services Tariff Pricing Plans, Special Access for Price Cap Local Exchange Carriers, AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services, WC Docket No. 16-143, WC Docket No. 15-247, WC Docket No. 05-25, RM-10593. Declaration of William P. Zarakas and Susan M. Gately (January 27, 2016); Supplemental Declaration of William P. Zarakas (March 24, 2016); Declaration of William P. Zarakas and Jeremy Verlinda (June 28, 2016, Attachment D to Comments of Sprint Corporation); Declaration of David E. M. Sappington and William P. Zarakas (June 28, 2016, Attachment E to Comments of Sprint Corporation); Further Supplemental Declaration of William P. Zarakas (August 9, 2016, Attachment A of Reply Comments of Sprint Corporation).

Declaration of William P. Zarakas Before the Federal Communications Commission In the Matter of Verizon Virginia. LLC and Verizon South, Inc., Complainants, v. Virginia Electric and Power Company d/b/a Dominion Virginia Power, Docket No. 15-90, File No. EB-15-MD-006 (November 18, 2015).

Declaration of William P. Zarakas and Matthew Aharonian (May 22, 2015) in the United States Court for the District of Columbia Circuit United States Telecom Association, Petitioner, v. Federal Communications Commission and the United States of America, Respondents, Case No. 15-1063 (and consolidated cases).

Declarations Before the Before the Federal Communications Commission In the Matter of Application of Comcast Corporation, General Electric Company and NBC Universal, Inc. for Comcast to Assign or Transfer Control of Licenses, Federal Communications Commission, MB Docket No. 10-56. Analysis of the FCC's Vertical Foreclosure and Nash Bargaining Models Applied To The Proposed Comcast-Time Warner Cable Transaction (December 21, 2014) and Supplemental Declaration: Analysis of the FCC's Vertical Foreclosure and Nash Bargaining Models Applied To The Proposed Comcast-Time Warner Cable Transaction (March 5, 2015).

Before the Public Utilities Commission of the State of Hawaii, In The Matter of Public Utilities Commission Instituting an Investigation to Reexamine the Existing Decoupling Mechanisms for Hawaiian Electric Company, Inc., Hawaii Electric Light Company, Inc., and Maui Electric Company, Limited, Docket No. 2013-1041, On Behalf of the Hawaiian Electric Companies. Report: "Targeted Performance Incentives: Recommendations to the Hawaiian Electric Companies," Prepared For The Hawaiian Electric Companies, William P. Zarakas and Philip Q Hanser, September 15, 2014.

Before the New Mexico Public Regulatory Commission, In The Matter Of The Application of TECO Energy, Inc., New Mexico Gas Company, Inc. and Continental Energy Systems, LLC, For Approval of TECO Energy Inc.'s Acquisition of New Mexico Gas Intermediate, Inc. and For All Other Approvals and Authorizations Required To Consummate and Implement The Acquisition, Utility Case No. 13-00231-UT, On Behalf of TECO Energy, Inc., New Mexico Gas Company, Inc. and Continental Energy Systems, LLC, Joint Applicants. March 2014.

Before the New Jersey Board of Public Utilities In the Matter of the Petition of Public Service Electric and Gas Company for Approval of the Energy Strong Program, expert report, "Analysis of Benefits:

REDACTED – FOR PUBLIC INSPECTION
WILLIAM P. ZARAKAS

PSE&G's Energy Strong Program," by Peter Fox-Penner and William P. Zarakas. NJ BPU Docket No. EO13020155 and GO13020156. October 7, 2013.

"Review and Analysis of Service Quality Plan Structure In The Massachusetts Department of Public Utilities Investigation Regarding Service Quality Guidelines For Electric Distribution Companies and Local Gas Distribution Companies." Philip Q Hanser, David E. M. Sappington and William P. Zarakas, Massachusetts D.P.U. 12-120, March 2013.

"Alaska Mobile Broadband Cost Model, Before The Federal Communications Commission In The Matter Of Connect America Fund and Universal Service Reform – Mobility Fund. WC Docket No. 10-90 and WT Docket No. 10-208A." William P. Zarakas and Giulia McHenry, February 2013

Expert Report of William P. Zarakas In The United States District Court For The Northern District of Florida MCI Communications Services, Inc., Plaintiff v. Murphree Bridge Corporation, Defendant, Case No. 5:09-cv-337, February 19, 2010.

Testimony of William P. Zarakas Before The Copyright Royalty Judges, Library of Congress, Washington D.C. In The Matter of Distribution of the 2004 and 2005 Cable Royalty Funds, Docket No. 2007-3 CRB CD 2004-20. June 1, 2009.

Declaration of William P. Zarakas In The Circuit Court of Fairfax County, Virginia In The Matter of Sharon Dougherty, Plaintiff Vs. Thomas J. Dougherty, Defendant Case No. CL 2007-008757. October 2008.

Expert report provided in Public Service Company of New Mexico vs. Smith Bagley, Inc. and Lite Wave Communications LLC In The United States District Court For The District of New Mexico. March 2007.

Expert report entitled "Comparative Market Value Analysis of Upper 700 MHz Public Safety Spectrum" in FCC WT Docket no. 96-86 (In the Matter of The Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010). June 2006.

Expert report entitled "Analysis of Potential Lost Profits Associated With The Alleged Breach of Contract Between Orbcomm and Orbcomm Asia Limited" before the American Arbitration Association. May 2006.

Direct testimony before the Federal Communications Commission in the matter of *Petition of ACS of Anchorage, Inc. Pursuant to Section 10 of the Communications Act of 1934, as amended, for Forbearance from Sections 251(c)(3) and 251(d)(1) In the Anchorage LEC Study Area*, WC Docket No. 05-281, January 9, 2006.

Expert report co-authored with Dorothy Robyn Before the U.S. House of Representatives Committee on Energy and Commerce and the U.S. Senate Committee on Commerce, Science and Transportation regarding the value of wireless spectrum in the 700 MHz band. Letters, May 18, 2005.

REDACTED – FOR PUBLIC INSPECTION
WILLIAM P. ZARAKAS

Direct and rebuttal testimony before the Federal Communications Commission in the matter of *Virginia Cable Telecommunications Association v. Virginia Electric and Power Company, d/b/a Dominion Virginia Power and Dominion North Carolina Power*, PA No. 01-005, December 21, 2001.

Expert report Before the U.S. Securities and Exchange Commission included in Form U-1 Application/ Declaration Under The Public Utility Holding Company Act of 1935 in the combination of Energy East Corporation with RGS Energy Group, Inc. (June 20, 2001) in Exhibit J-1, entitled “Analysis Of The Economic Impact Of A Divestiture Of The Gas Operations Of Rochester Gas And Electric Corporation,” May 15, 2001.

Expert report Before the U.S. Securities and Exchange Commission included in Form U-1 Application/ Declaration Under The Public Utility Holding Company Act of 1935 in the acquisition by Sierra Pacific Resources of Portland General Electric Company, 2000 in Exhibit H-1, entitled “Analysis Of The Economic Impact Of A Divestiture Of The Gas Operations Of Sierra Pacific Resources,” January 31, 2000.

Before the U.S. Securities and Exchange Commission included in Form U-1 Application/ Declaration Under The Public Utility Holding Company Act of 1935 in the combination of Energy East Corporation with CMP Group, Inc. and with CTG Resources, Inc. in Exhibit J-1, entitled “Analysis Of The Economic Impact Of A Divestiture Of The Gas Operations Of Energy East,” October 29, 1999.

Before the Supreme Court of the State of New York, County of Niagara, Supplemental Affidavit in *Village of Bergen, et al. vs. Power Authority of the State of New York*, February 1999.

Rebuttal Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the North Carolina Utilities Commission, Docket No. P-100, SUB 133D, Filed March 9, 1998; *In Re: Proceeding to Determine Permanent Pricing for Unbundled Network Elements*.

Direct Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the North Carolina Utilities Commission, Docket No. P-100, SUB 133D, Filed December 15, 1997; *In Re: Proceeding to Determine Permanent Pricing for Unbundled Network Elements*.

Rebuttal Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the South Carolina Public Service Commission, Docket No. 97-374-C, Filed November 25, 1997; *In Re: Proceeding to Review BellSouth Telecommunications, Inc.’s Cost Studies for Unbundled Network Elements*.

Direct Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the Florida Public Service Commission, Docket Nos. 960757-TP/960833-TP/960846-TP/960916-TP/971140-TP, Filed November 13, 1997; *In Re: Petition of AT&T, MCI, and MFS for Arbitration with BellSouth Concerning Interconnection, Rates, Terms and Conditions of a Proposed Agreement*.

Direct Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the South Carolina Public Service Commission, Docket No. 97-374-C, Filed November 3, 1997; *In Re: Proceeding to Review BellSouth Telecommunications, Inc.’s Cost Studies for Unbundled Network Elements*.

REDACTED – FOR PUBLIC INSPECTION
WILLIAM P. ZARAKAS

Rebuttal Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the Tennessee Regulatory Authority, Docket No. 97-01262, Filed October 17, 1997; *In Re: Contested Cost Proceeding to Establish Final Cost Based Rates for Interconnection and Unbundled Network Elements.*

Direct Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the Tennessee Regulatory Authority, Docket No. 97-01262, Filed October 10, 1997; *In Re: Contested Cost Proceeding to Establish Final Cost Based Rates for Interconnection and Unbundled Network Elements.*

Rebuttal Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the Alabama Public Service Commission, Docket No. 26029, Filed September 12, 1997; *In Re: Generic Proceeding: Consideration of TELRIC Studies.*

Rebuttal Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the Georgia Public Service Commission, Docket No. 7061-U, Filed September 8, 1997; *In Re: Review of Cost Studies, Methodologies and Cost-Based Rates for Interconnection and Unbundling of BellSouth Telecommunications Services.*

Rebuttal Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the Louisiana Public Service Commission, Docket Nos. U-22022/22093, Filed September 5, 1997; *In Re: Review of Consideration of BellSouth Telecommunications, Inc.'s TSLRIC and LRIC Cost Studies to Determine Cost of Interconnection Services and Unbundled Network Components, to Establish Reasonable, Non-Discriminatory, Cost-Based Tariff Rates.*

Direct Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the Alabama Public Service Commission, Docket No. 26029, Filed August 29, 1997; *In Re: Generic Proceeding: Consideration of TELRIC Studies.*

Direct Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the Louisiana Public Service Commission, Docket Nos. U-22022/22093, Filed July 11, 1997; *In Re: Review of Consideration of BellSouth Telecommunications, Inc.'s TSLRIC and LRIC Cost Studies to Determine Cost of Interconnection Services and Unbundled Network Components, to Establish Reasonable, Non-Discriminatory, Cost-Based Tariff Rates.*

Direct Panel Testimony of William P. Zarakas and D. Daonne Caldwell before the Georgia Public Service Commission, Docket No. 7061-U, Filed April 30, 1997; *In Re: Review of Cost Studies, Methodologies and Cost-Based Rates for Interconnection and Unbundling of BellSouth Telecommunications Services.*

Direct and rebuttal testimony Before the Virginia State Corporation Commission on behalf of United Telephone - Southeast, Inc. and Centel Corporation, May 1994.

Direct and rebuttal testimony Before the Tennessee Public Service Commission on behalf of United Telephone - Southeast, Inc., Docket No. 93-04818, January 28, 1994.

Direct and rebuttal testimony Before the Florida Public Service Commission on behalf of Southern Bell Telephone & Telegraph Company, Docket No. 920260-TL, December 10, 1993.

Direct and rebuttal testimony Before the Tennessee Public Service Commission on behalf of South Central Bell, Docket Nos. 92-13527 and 93-00311, March 22 and March 29, 1993.

PAPERS AND PUBLICATIONS

“Two-sided Markets and the Utility of the Future: How Services and Transactions Can Shape the Utility Platform,” by William P. Zarakas, *The Electricity Journal*, Volume 30 (2017) 43-46.

“DER Incentive Mechanisms as a Bridge to the Utility of the Future,” by William P. Zarakas, Frank C. Graves and Heidi Bishop, presented at SNL Knowledge Center’s Energy Utility Regulation Conference: Strategies for Profit and Reliability, December 14, 2016.

“Electric Utility Services and Evolving Platforms in the Mid-Atlantic Region,” by William Zarakas, presented at the Mid-Atlantic Conference of Regulatory Utilities Commissioners (MACRUC) 20th Annual Education Conference, Williamsburg, VA, June 23, 2015.

“Growth Prospects and Shifting Electric Utility Business Models: Retail, Wholesale and Telecom Markets,” by William P. Zarakas, *The Electricity Journal*, Volume 28, Issue 5, June 2015.

“Do We Need a New Way to Regulate Electric Utilities?,” by William P. Zarakas, presented at the Energy Bar Association 2015 Annual Meeting, Washington, DC, May 6, 2015.

“Investing In Electric Reliability and Resiliency,” by William P. Zarakas, presented at the NARUC 2014 Summer Meeting - Joint Electricity and Critical Infrastructure Committees, Dallas, TX, July 15, 2014.

“Utility Investments in Resiliency: Balancing Benefits with Cost in an Uncertain Environment,” by William P. Zarakas, Sanem Sergici, Heidi Bishop, Jake Zahniser-Word and Peter S. Fox-Penner, *The Electricity Journal*, Volume 27, Issue 5, June 2014.

“Infrastructure and Competition in the Electric Delivery System,” by William P. Zarakas, *The Electricity Journal*, Volume 26, Issue 7, September 2013.

“Low Voltage Resiliency Insurance, Portable small-scale generators could keep vital services on line during a major power outages,” by William Zarakas, Frank Graves, and Sanem Sergici, forthcoming *Public Utilities Fortnightly* September 2013.

“Finding the Balance Between Reliability and Cost: How Much Risk Should Consumers Bear?,” by William P. Zarakas and Johannes P. Pfeifenberger, presented at the Western Conference of Public Service Commissioners, Santa Fe, NM, June 3, 2013

“The Utility of the Future: Distributed or Not?,” by William P. Zarakas, presented at Advanced Energy 2013, New York, NY, April 30, 2013

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WILLIAM P. ZARAKAS

"Rates, Reliability, and Region," by William P. Zarakas, Philip Q Hanser, and Kent Diep, *Public Utilities Fortnightly*, January 2013

"Approaches to Setting Electric Distribution Reliability Standards and Outcomes," by Serena Hesmondhalgh, William P. Zarakas, and Toby Brown, The Brattle Group, Inc., January 2012

"Measuring Concentration In Radio Spectrum License Holdings," presented at the Telecommunications Policy Research Conference (TPRC), George Mason University, September 26, 2009 (with Coleman Bazelon).

"Structural Simulation of Facility Sharing: Unbundling Policies and Investment Strategy in Local Exchange Markets," White Paper, July 2005 (with Glenn A. Woroch, Lisa V. Wood, Daniel L. McFadden, Nauman Ilias, and Paul C. Liu).

"Betting Against The Odds? Why broadband over power lines (BPL) can't stand alone as a high-speed Internet offering." *Public Utilities Fortnightly*, April 2005, pp. 41-45 (with Kenneth J. Martinian).

"The Impact of the Number of Mobile Operators on Consumer Benefit," White Paper, March 2005 (with Kenneth J. Martinian and Carlos Lapuerta).

"Wholesale Pricing and Local Exchange Competition", Info, Volume 6, Number 5, 2004, pp. 318-325 (with Lisa V. Wood and David E. M. Sappington).

"Regulatory Performance Measurement Plans and the Development of Competitive Local Exchange Telecommunications Markets", Working Paper, November 2003 (with David E. M. Sappington, Lisa V. Wood and Glenn A. Woroch).

ATTACHMENT B: JEREMY A. VERLINDA CV

Dr. Verlinda specializes in competition issues in both antitrust and regulatory contexts. He has provided and supported testimony in competition matters before U.S. district courts, federal regulatory agencies, and various state public utilities commissions, as well as before competition and regulatory agencies in Canada and Australia. He has also supported damages analyses in price fixing and arbitration proceedings around the world. He has particular expertise in network industries, including energy markets, telecommunications, media markets, transportation, financial markets, health care, and advertising.

Dr. Verlinda has provided direct consulting services to firms around the world regarding antitrust risks associated with planned or potential acquisitions and also has assisted them with subsequent merger proceedings in front of the reviewing agencies. Dr. Verlinda has prepared white papers on vertical integration risk and co-authored a series of reports evaluating the competitiveness of the Canadian wireless telecommunications industry in joint filings with the Canadian Competition Bureau before the Canadian Radio-television and Telecommunications Commission.

Prior to joining The Brattle Group, Dr. Verlinda spent 8 years at the *Antitrust Division* of the U.S. *Department of Justice*, where his casework focused on monopolization claims in the payments and electricity industries, criminal price fixing in air cargo and financial markets, and merger analysis in the consumer goods, airlines, entertainment, and electricity industries. In electricity markets, Dr. Verlinda has particular expertise in merger simulation, including incorporation of system dispatch accounting for transmission grid and plant operating characteristics.

Dr. Verlinda received his Ph.D. in Economics from the University of California – Irvine, where his primary research examined the relationship between pricing dynamics and market structure in retail gasoline markets. Dr. Verlinda also specialized in econometrics, focusing in particular on demand estimation, market simulation, and the application of Bayesian methods to discrete choice analysis and panel and time series data.

EDUCATION

Ph.D. Economics, University of California – Irvine, June 2005

Dissertation: Essays on Pricing Dynamics, Price Dispersion, and Nested Logit Modelling

B.S. Economics, University of Washington, March 1999

B.A. Business Administration, University of Washington Business School, March 1999

AREAS OF EXPERTISE

JEREMY A. VERLINDA

- Competition & Antitrust (including merger and conduct analysis)
- Econometrics and Statistics (including demand estimation, merger and entry simulation, and damages calculations)
- Industrial Organization

SELECTED EXPERIENCE

- Provide ongoing expert support on antitrust risks for potential acquisitions in various industries.
- Provide ongoing expert support for defendants facing fines for anticompetitive coordinated conduct in foreign exchange markets.
- Provide ongoing expert support for a third party in DOJ and state agency review of a merger in the telecommunications industry.
- Provide ongoing expert support and testimony in an alleged monopolization claim in the oil transportation industry.
- Provide ongoing expert support and testimony in an alleged monopolization claim in the marine freight industry.
- Provide ongoing expert support for defendants facing damages claims resulting from a multinational price fixing cartel, including preparation of expert reports.
- On behalf of DISH Network, submitted testimony and provided ongoing support on the potential effects of the merger of Sinclair Broadcast Group and Tribune Media, under review before the US Federal Communications Commission.
- On behalf of electric utilities in California, provided expert support for testimony on the existence and abuse of market power during the California energy crisis, under review at the US Federal Energy Regulatory Commission.
- On behalf of a global investment bank in connection with a European Commission investigation of alleged collusion to manipulate foreign exchange benchmarks during 2008-2012, co-authored a report submitted to the EC on calculating the value of sales in foreign exchange transactions for determination of possible cartel fines.

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- On behalf of merging parties, provided expert support and drafted a white paper submitted to the Canadian Competition Bureau in a wireless telecommunications merger.
- On behalf of Sprint Corporation, submitted testimony and provided expert support in a regulatory proceeding before the Federal Communications Commission on competition issues in dedicated internet bandwidth services, including possession of market power and assessment of market power abuse.
- On behalf of Australian natural gas pipeline operator APA Group, prepared a white paper (with co-authors) on a framework for antitrust review of integration in network industries.
- On behalf of merging electric and gas utilities, provided direct expert support on antitrust and regulatory review risk. Prepared analyses for direct presentation before the Federal Trade Commission. Oversaw preparation of expert testimony before state utility commission regarding competitive effects of the merger.
- On behalf of merging electric utilities, supported various experts' testimonies in multiple state public utility commission proceedings, including issues of horizontal and vertical market power as well as incentives and ability to deter innovation, deter entry, or otherwise raise rivals costs.
- On behalf of an acquisition target in the aerospace industry, provided support on global antitrust risks associated with unilateral effects in bargaining markets, as well as conglomerate issues associated with bundling.
- For the Canadian Competition Bureau, provided analysis of risk of foreclosure and raising rivals costs concerns regarding vertical integration in an acquisition review in the mobile telecommunications industry.
- Provided consulting services to a third party intervener in a state public utility commission electric-utility merger review proceeding. Gave expert advice on corporate governance issues, incentives for the merged firm to raise rivals costs, and incentives to deter entry.
- For the Canadian Competition Bureau in proceedings before the Canadian Radio-television and Telecommunications Commission, co-authored a series of reports on the competitiveness of the wireless communications industry. Evaluated the structural performance of the market's pricing, concentration, and degree of wireless penetration. Conducted demand estimation and developed a model to simulate effects of de novo entry, including consumer surplus benefits, losses to incumbent carriers, and expected profits and viability of the

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entrant. Presented estimates of network operators' vertical incentives to raise wholesale costs of small carriers and mobile virtual network operators.

- On behalf of plaintiff-interveners in the DOJ's challenge of Texas voter ID laws, supported expert testimony that estimated racial disparity in costs and impact of obtaining an ID.
- For a private antitrust suit before a U.S. district court, supported defendants' expert testimony in support of a *Daubert* challenge of plaintiffs' expert. Evaluated complex econometric simulation models of consumer demand and entry and demonstrated the irrational behavioral assumptions for consumers and firms in plaintiffs' expert's economic model.
- For a foreign owner of a gas-fired energy facility in international arbitration proceedings, supported expert testimony calculating damages from forced early termination of a gas supply agreement. Evaluated expected economic dispatch over the life of the contract and constructed a cash flow model to predict lost profits.
- On behalf of U.S. Airways in the Southern District of New York, supported expert testimony regarding alleged monopolization claims against Sabre Inc. Evaluated issues of disparate pricing in two-sided markets and the potential market distortions from price discrimination and exclusive agreements.
- While at the *Department of Justice*, conducted **merger review** in the following investigations: Exelon/PSEG (energy), Delta/Northwest (airlines), LiveNation/Ticketmaster (entertainment), Mirant/RRI (energy), Allegheny/First Energy (energy), Exelon/Constellation (energy), 3M-Avery (consumer products), Flowers/Hostess Brands (consumer products).
- While at the *Department of Justice*, investigated claims of **monopolization** conduct in the following cases: Google/Yahoo (search and advertising); American Express/Visa/MasterCard (payments), Visa (payments), Entergy (energy), BlueCross/BlueShield of Michigan (health insurance).
- While at the *Department of Justice*, evaluated claims of **price discrimination** and calculated damages and volume of commerce in the following industries and/or cases: municipal bonds, air cargo shipments, and LIBOR manipulation.

REPORTS

Declaration (August 7, 2017) and Reply Declaration (August 29, 2017) of William Zarakas and Jeremy Verlinda, attached at Exhibit E in Petition to Dismiss or Deny of DISH Network LLC, MB Docket No.

JEREMY A. VERLINDA

17-179, In the Matter of Tribune Media Company (Transferor) and Sinclair Broadcast Group, Inc. (Transferee) Consolidated Applications for Consent of Transfer Control.

Comments of Romkaew Broehm, Jeremy Verlinda, and James Reitzes, Docket No. RM16-21-000 (filed November 28, 2016), Modifications to Commission Requirements for Review of Transaction Under Section 203 of the Federal Power Act and Market-Based Rate Applications under Section 205 of the Federal Power Act.

Declaration of William Zarakas and Jeremy Verlinda, attached at Exhibit D in Comments of Sprint Corporation, WC Docket Nos. 16-143, 05-25, 15-247, RM-10593 (filed June 28, 2016), In the Matter of Special Access for Price Cap Local Exchange Carriers AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services.

Benefits and Costs of Integration in Transmission/Transportation Networks: An Application to Eastern Australia Gas Markets. Prepared for APA Group in ACCC proceeding *Inquiry into the east coast gas market*, April 2016 (July 2016; with Toby Brown, Paul Carpenter, James Reitzes, and Neil Lessem).

Canadian Wireless Market Performance and the Potential Effect of an Additional Nationwide Carrier. Prepared for Canadian Competition Bureau for CRTC Proceeding 2014-76 (May 2014; with Kevin Hearle, Giulia McHenry, James Reitzes, and Coleman Bazelon) (Available from the [CRTC](#)).

Vertical Foreclosure in Canadian Wholesale Services Markets: Supplemental Filing. Prepared for Canadian Competition Bureau for CRTC Proceeding 2014-76 (Aug 2014; with Kevin Hearle, Giulia McHenry, James Reitzes, and Coleman Bazelon) (Available from the [CRTC](#)).

Canadian Wireless Market Performance and the Potential Effect of an Additional Nationwide Carrier: Response to Intervener Filings and Oral Testimony. Prepared for Canadian Competition Bureau for CRTC Proceeding 2014-76 (Oct 2014; with Kevin Hearle, Giulia McHenry, James Reitzes, and Coleman Bazelon) (Available from the [CRTC](#)).

PUBLICATIONS

Calculating Reasonable Royalty Damages Using Conjoint Analysis, AIPLA Quarterly Journal (Spring 2017), with Greg Allenby, Peter E. Rossi, Lisa Cameron, and Yikang Li.

Do Rockets Rise Faster and Feathers Fall Slower in an Atmosphere of Local Market Power? Evidence from the Retail Gasoline Market, Journal of Industrial Economics (September 2008).

A Comparison of Two Common Approaches for Estimating Marginal Effects in Binary Choice Models, Applied Economics Letters (February 2006).

A Bayesian Analysis of Tree Structure Specification in Nested Logit Models, Economics Letters (April 2005).

Mimeographs

The Effect of the Internet on Pricing in the Airline Industry (with Leonard Lane) (Available on [SSRN](#))

The Effect of Market Structure on the Empirical Distribution of Airline Fares (Available on [SSRN](#))

Works in Progress

The Intersection of Antitrust and Market Manipulation Law (with Shaun D. Ledgerwood), submitted for publication (December 2016).

A review of the airline hub effects from the Delta-Northwest Merger

Estimating the effects of entry in the wireless telecommunications industry in Canada

Merger Analysis in Nodal-Price Electricity Markets: Residual Demand from Powerflow Models

On the Implications for Geographic Market Definition in Nodal-Price Electricity Markets

ACADEMIC HONORS AND FELLOWSHIPS

University of California Transportation Center Fellowship: Fall 2003 to Spring 2004

School of Social Sciences Predissertation Fellowship: Winter 2003

School of Social Sciences Summer Research Fellowship: Summer 2001, 2002, 2004

Institute for Mathematical Behavior Sciences Summer Fellowship: Summer 2002

Invited Panelist to the Teaching Assistant Professional Development Program, Instructional Resources Center, UC, Irvine: Summer 2003

National Scholar Fellowship: UC, Irvine: Fall 1999 to Spring 2001

OTHER HONORS AND AWARDS

“Award of Distinction” – Antitrust Division, 2010